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The Problem of Combat with the Nuclear Means of the Enemy and Its Solution

by

Chief Marshal of Artillery S. Varentsov

Under today's conditions the strength of belligerents must be assessed primarily in the light of their capabilities and of their capacity for the employment of nuclear weapons. In a modern operation the side which can win fire supremacy over the enemy, primarily in nuclear weapons, will win. The conduct of any operation, especially in the initial period of a war, is inconceivable without reliable destruction of the nuclear means of the enemy.

The experience of exercises and of operational games over the past two years shows that many generals and senior officers still have an inadequate understanding of the complexity of the problem of combat with the nuclear means of the enemy and of the whole set of problems which must be solved in order to reduce his ability to use these weapons against our troops.

As is generally known, our probable enemy has a considerable quantity of means of nuclear attack, such as guided missiles and free rockets and atomic artillery and aircraft which use nuclear ammunition. In the offensive zone of a front there can be approximately the following number of missile and artillery batteries, using nuclear ammunition alone:

-batteries of 203 mm howitzer and 280 mm cannon, batteries and battalions of "Honest John" and battalions of "Little John" free rockets (NURS) and "Lacrosse" -- up to 170;

-mounts for "Redstone" guided missiles (URS), battalions of "Corporal" or "Sergeant" guided missiles, detachments of "Matador" or "Mace" cruise-missiles -- up to 20.

It is fully understandable that nuclear weapons must be destroyed in the shortest possible periods, calculated in minutes, after they have been detected in order to prevent the enemy from delivering nuclear strikes. First of all, in every case, the missile and artillery batteries using nuclear ammunition, located at launch and firing sites, must be destroyed. In this process, primary attention should be given to the destruction of batteries of long-range missiles such as the "Redstone", "Corporal", "Sergeant" and "Pershing". The range of these batteries permits the enemy to deliver nuclear strikes against our missile units and against the disposition areas of combined-arms large units and command posts and airfields.

Reconnaissance must be aimed first of all at providing mensuration data (izmeritelnyye dannyye) on the enemy's missile batteries, armed with "Redstone", "Corporal", "Sergeant" and "Pershing" missiles. At the same time, the disposition of the nuclear means of divisions deployed on the immediate border during the initial period of a war or in direct contact with our troops during the war must be reconnoitered.

As is generally known, our probable enemy imposes great tasks on his aviation in the delivery of nuclear strikes against our troops. To be specific, aviation may receive 60 to 70 percent of the total of the nuclear weapons allocated for an operation. Consequently, the destruction of aircraft on the airfields where they are based, is one of the most important tasks in the combat with the nuclear means of the enemy.

In the zone of a front there may be up to 40 or 50 airfields for the enemy's tactical aviation. Since these will normally be reliably protected by a whole system of antiair defense, the delivery of strikes against them will be entrusted to the missile troops in the first instance.

Not only the missile troops of a front but also those of the High Command (Glavnoye Komandovaniye) will operate against the airfields in the initial period of a war. To destroy the aircraft of the enemy which use nuclear ammunition is, figuratively, to tear the nuclear sword from his hands.

Together with the missile batteries and aviation, the most important targets in the combat with the enemy's nuclear means are the assembly bases and depots for them. The main mass of nuclear ammunition, and, during initial combat operations, up to 50 percent of the nuclear ammunition which it is planned to use in the operation, may be located at these points in the initial period of a war. The destruction of the assembly bases and depots for nuclear ammunition is also one of the most important tasks, not only of a front, but also of the missile troops of the High Command. The destruction of the assembly bases and depots for nuclear ammunition in a theater of military operations radically weakens the enemy in his use of nuclear weapons against our troops. If the destruction of these targets is skilfully organized, the enemy will be compelled not only to revise (redistribute) but also materially to restrict his expenditure of nuclear weapons.

In order to be sure of weakening the enemy in his use of nuclear weapons against our troops, it is necessary to devote most serious attention to the destruction of such targets as command posts, control centers for reconnaissance and artillery fire-directing aircraft and the enemy's radio-technical means.

At command posts all the questions connected with the combat use of nuclear weapons are worked out. Specifically, the reconnaissance of targets is organized; plans are made for the delivery of nuclear strikes, and for the direction of missile units and aviation up to the issue of the necessary commands for the delivery of nuclear strikes. Destruction of the enemy's command posts therefore makes it possible to resolve the main problem - the substantial weakening of the enemy in his organization of the use of nuclear weapons.

In resolving the questions of combat with the enemy's nuclear means, the destruction of his command posts must be undertaken boldly and decisively, not only in the zone of a front, but also throughout the whole theater of military operations. It is desirable for the strikes against command posts to take place during a massed strike, simultaneously with strikes against the nuclear targets and the more important groupings of the enemy.

The enemy's reconnaissance and artillery fire-directing aircraft are the means which allow him to expose the grouping of our troops, including the disposition areas of missile units and subunits, and to obtain mensuration data on these objectives in order to deliver nuclear strikes against them. If we deprive the enemy of his reconnaissance and artillery fire-directing aircraft, we will by so doing ensure the fulfilment of the basic task of weakening the enemy in the effective employment of nuclear weapons, since without aircraft it will be extremely difficult for him to obtain the necessary mensuration data on our objectives. Having been deprived of reconnaissance and artillery fire-directing aircraft, the enemy will be unable to make use of a considerable number of his nuclear means with sufficient effectiveness. This applies particularly to repeat (povtornyy) strikes, before which combat reconnaissance (dorazvedka) must, without fail, be conducted. Not having the capability to organize combat reconnaissance, the enemy will deliver many strikes inaccurately and against empty areas.

Enemy reconnaissance and artillery fire-directing aircraft must be destroyed, primarily, by our nuclear strikes against the airfields where they are based and the surviving aircraft during the period of their combat activity, by the means of the antiair defense.

The timely destruction of the main radio electronic intelligence centers of the enemy is also of considerable importance. The work of these centers can be made more difficult to some extent by the setting-up of various types of interference.

In this way, in order to weaken the enemy fundamentally in his employment of nuclear weapons and in order to achieve supremacy with them, reconnaissance must be purposefully organized and mensuration data must be obtained on such enemy objectives as:

-the launch sites of missile batteries;

-the firing positions of artillery batteries which use nuclear ammunition;

-the base airfields of bomber and fighter-bomber aircraft;

-the assembly bases and depots for nuclear ammunition.

In addition to these basic objectives, it is also necessary to obtain mensuration data on the command posts of groups of armies, field armies, army corps and divisions; on aviation control centers; on base airfields for reconnaissance and artillery fire-direction aircraft and on the main centers of radio electronic intelligence.

In the initial period of a war the task of destroying the enemy's nuclear means must be performed by the first massed strike, before the ground forces of the front go over to the offensive, often against previously reconnoitered objectives; under these conditions prior reconnaissance of the main nuclear objectives may take place only with the permission of the commander of the troops of the front, depending on the number of aircraft which are determined to be available to fly over the border in the course of 24 hours.

In the course of a war, the task of destroying nuclear means should be completely performed by a massed strike at the beginning of an offensive operation by a front and then, as they are exposed and as mensuration data are received, by single, or if necessary, by grouped nuclear strikes. During the "pauses" between operations (if these occur) enemy nuclear objectives must be destroyed as they are exposed, by single, or if necessary, by grouped nuclear strikes.

One of the most important tasks in the period of preparation for an offensive operation is not to allow the enemy to carry out a nuclear strike on the main grouping of the troops of a front, in order to break up our offensive. If it becomes positively known that the enemy is preparing and will try to deliver such a strike, it will be necessary to forestall it and, with a massed nuclear strike of our own, to destroy as great a number as possible of the above-mentioned objectives. In order to perform this task, in accordance with their deployment, missile units must immediately prepare for strikes against nuclear and then against other objectives on which the enemy's capability to organize the use of nuclear weapons depends.

In defense, in order to break up an enemy offensive, it is also necessary to plan a massed nuclear strike directed primarily against the nuclear means, command posts and main groupings of the enemy's troops. Such a massed strike, successfully executed and supplemented by new strikes against the enemy troops (if this is necessary), will allow a transition from the defensive to the offensive.

From what has been said, it is evident that in organizing combat with the nuclear means of the enemy, we cannot be restricted to reconnaissance and to the destruction of subunits which are immediately capable of using nuclear weapons. The task of the struggle for nuclear supremacy is considerably greater. It must include combat with the whole complex of forces and means, which the enemy makes use of in employing nuclear weapons.

To perform this task it is necessary to establish an orderly and all-embracing system, in which will be included all the forces and means necessary for reconnaissance and destruction, a well-organized rear area and, lastly, precise control.

Let us first examine the means of destruction which can be used to weaken the enemy, in the nuclear sense. These are, above all others, nuclear missile weapons, which have great range coverage (diapazon dalnosti) and vast destructive capability.

The principal tasks in combating the nuclear means of the enemy will be accomplished by missile large units and units of the ground forces — missile large units and operational-tactical units and independent (otdelnyy) battalions of tactical missiles.

At present missile large units and tactical operational missile units are organizationally presented as army and front missile brigades and as independent missile battalions attached to fronts for reinforcement. In addition, for combat with the enemy's nuclear weapons, the battalions of tactical missiles of the motorized rifle and tank divisions, can be used in an army. Thus, a front has missile weapons capable of combating the enemy's nuclear means, disposed within the limits of both the tactical and the operational depth.

In case of need, missile large units and units of the missile troops of the High Command may also be called in to combat the enemy's nuclear means on behalf of a front. They will be used for the destruction of the main enemy nuclear objectives, which are unattainable for the missile troops of the front or for the front's aviation. To such objectives belong the assembly bases and depots, the launch sites of long-range ballistic missiles, communications centers, airfields, ports, loading and unloading stations and the sites of cruise missiles which have great range of action.

The characteristics of means of combat, besides the range of fire, are the time needed to prepare for the delivery of a strike after receipt of the command, the accuracy of fire and the yield of the nuclear warhead.

The time taken to prepare the missile for launching has particular significance in the destruction of the enemy's nuclear weapons at their sites. After a target has been detected at a site, it is necessary to destroy it as quickly as possible, in order to forestall the enemy in the delivery of a strike. Here we must bear in mind that the enemy's nuclear means will be at their sites for a very limited time before delivery of the strike. Thus, for

example, a battery of "Honest John" or "Lacrosse" requires not more than 30 minutes to occupy a position and to prepare to open fire, a battery of "Sergeant", up to one hour. It is true that, when detected, these weapons may be at varying degrees of readiness to deliver a strike; and if we take their readiness as 50 percent, we will have an average of 15 minutes to destroy tactical missiles and atomic artillery and 30 minutes to destroy operational tactical missiles.

In defining the time for the delivery of strikes against the enemy's nuclear weapons one must also consider the reliability with which they can be destroyed. This must be not less than 90 percent. In order that this reliability can be ensured, the above-mentioned period will shorten still further; for tactical weapons from 2 to 9 minutes and for operational-tactical weapons, from 10 to 25 minutes. During this period, the reconnaissance data must be received and processed, a decision must be taken and relayed to the firing subunits and the latter must be prepared for the delivery of a strike or for opening fire.

As the experience of exercises has shown, a large proportion of this period is spent in the receipt and processing of reconnaissance data, since they pass through many departments, and also in the making of a decision and in relaying it to subunits. Thus, for example, on a series of exercises, up to 40 to 50 minutes were spent in the making of a decision and in allocating a strike mission against the enemy's nuclear means.

The periods taken to prepare subunits for the delivery of a strike or for opening fire are at present shortened to the utmost and are limited only by the technical capabilities of the firing means. At the present time duty (dezhurnyy) missile subunits of army and front missile brigades can be ready to launch a missile within 15 to 20 minutes of the receipt of the coordinates of a target, and subunits of tactical missiles within 8 to 10 minutes.

The accuracy of fire of the missiles must be sufficiently high, or alternately must be compensated for by greater yield in the nuclear charges.

According to all the indications which have been examined, the existing types of missiles of the ground troops are fully suitable for combat with the enemy's nuclear means. In the table which is shown below, the characteristics of enemy objectives are given, and the approximate yield of the nuclear charges, which can be used in operational-tactical and tactical missiles, is indicated.

From analysis of the table it is clear that the missile units of the ground troops can successfully combat all the troop objectives of the enemy which are connected with the employment of nuclear weapons. In accordance with the yield of the nuclear warhead used to destroy one objective or another, the problem of destroying either both materiel and personnel or only the personnel and some of the equipment can be resolved.

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Targets	Area in km²	Distance from the front line in kms	Element of the target which is to be destroyed	Necessary yield of the nuclear warhead expressed in kilotons	Type of missile
1	2	3	4	5	6
Battery of 203mm howitzers on site	1	4 to 8	Personnel in trenches	up to 10	R-30
Battery of 280mm cannon on site	2 to 4	8 to 10	Personnel in trenches	up to 10	R-30
Battery of "Honest John", free rockets on site	1	4 to 12	Materiel	up to 15	R-30
Battalion of "Honest John" free rockets ("Lacrosse" guided missiles) on launch site	1 to 5	4 to 10	Unprotected personnel Materiel	up to 2 up to 15	R-30 R-30
Battalion of "Honest John" ("Lacrosse"), in concentration area	8 to 9	20 to 40	Unprotected personnel	5 to 10 up to 25 up to 20	R-30 R-170 R-300
Battalion of "Corporal", guided missiles, in concentration area	9 to 12	50 to 80	Unprotected personnel	up to 25 up to 20	R-170 R-300
Individual "Corporal" mount on site	---	30 to 60	Materiel	30 to 150 25 to 55	R-170 R-300
Individual "Redstone" guided missile mount, on site	---	65 to 90	Materiel	30 to 150 25 to 55	R-170 R-300
"Redstone" artillery technical and engineer companies	1 to 1.5	70 to 100	Unprotected personnel and equipment	8 to 25 7 to 10	R-170 R-300
Detachment of "Matador", ("Mace") cruise missiles on launching platform	---	120 to 150	Materiel	10 to 55 10 to 20	R-170 R-300
Detachment of cruise missiles in siting area	4 to 6	120 to 150	Unprotected personnel	up to 25 up to 20	R-170 R-300
Preparatory zone for a group of cruise missiles	4 to 8	130 to 160	Materiel	up to 50 up to 25	R-170 R-300
Tactical aviation airfield	36	150 to 400	Aircraft	up to 15	R-300
Airfield for artillery-fire-direction and reconnaissance aircraft	8 to 15	40 to 80	Aircraft	1 to 5 1 to 2	R-170 R-300
Command post of a group of armies, field army	8 to 15	60 to 170	Radio stations and shelters	50 to 100 50 to 60	R-170 R-300
Command post of an army corps (AK - armeyskiy korpus)	3 to 4	15 to 50	Radio stations	14 to 60 10 to 20	R-170 R-300
Command post of a division	1 to 2	10 to 20	Armored transport	5 to 10 15 to 60	R-30 R-170
Aviation control and guidance center	2	30 to 50	Radar	15 to 60 10 to 20	R-170 R-300
Center for control of aviation in a sector	1	100 to 200	Radar	15 to 60 10 to 20	R-170 R-300
Army supply point	4		Nuclear ammunition in shelters of a light type	300 and more 200 to 600	R-170 R-300

The proper selection of the element of a target which is to be destroyed is of very great significance. For example, the combat formation of a group of "Redstone" guided missiles consists of the firing positions of the launch batteries and of the disposition areas of the fire control point, of headquarters, engineer and technical artillery companies, at distances of 4 to 13 km from one another. The launching mounts on the launch sites and the engineer and technical artillery companies can serve as independent objectives for destruction. At the different periods of their combat operations one of these objectives will assume the greatest importance, and if reconnaissance provides the necessary data, the point of aim for the strike must be set there. Otherwise, we will be compelled to deliver a strike against all the objectives which have been exposed.

A group of "Matador", ("Mace") cruise-missiles are disposed in two areas, preparatory and launching, separated by a distance of 6 to 7 km. As a whole, a group of cruise missiles constitutes four separate objectives for destruction.

A tactical aviation airfield (one squadron on the airfield) may occupy an area of 30 to 50 km^2. However, the aircraft on their hardstands, the fuel and munition depots, or the control points, disposed over considerably smaller areas, may be selected for destruction.

Supply points and depots for special types of weapons, depending on their significance, (points in corps rear areas, army depots, depots in the forward area or base depots in the administrative zone) may have between 5 to 6 and 12 to 18 separate storage places, disposed in separate groups (of 2 to 3 storage places) at distances of 6 to 7 km from one another. For the destruction of a whole point or depot, as many nuclear warheads as there are separate groups of storage places exposed by reconnaissance will be needed.

In delivering nuclear strikes against objectives it is necessary to select the type and height of the nuclear burst properly. Air bursts will be those most frequently produced;

although for the destruction of a series of objectives, especially of those which are deeply disposed, ground bursts may be more effective, providing greater destruction of the enemy by the generation of high levels of radioactive contamination of the area.

For the destruction of the enemy's nuclear means in operational and tactical depth, operational-tactical and tactical missiles with chemical filler (v khimicheskom snaryazhenii) may be used; but in this case, as in the case of nuclear ground bursts, the possible direction of the wind in the target area must be considered. To destroy 75 to 80 percent of the personnel of a battalion (battery) of "Honest John" rockets, of 203 mm howitzers or of 280 mm cannon, firing at a minimum distance, two, and at a maximum distance, three of four tactical missiles with chemical fillers will be required.

Artillery is sufficiently effective for combat with the enemy's tactical nuclear means, especially long-range gun artillery. The ability of artillery to open highly accurate fire quickly permits it to be considered at present as one of the important means of combat with the 203 mm howitzers, 280 mm cannon, "Honest John", and "Lacrosse" missiles on their firing positions, and also as a means for the destruction of their observation and command posts and radar station sites.

The main quantity of the enemy's nuclear means, as is generally known, is located within the limits of the tactical depth, at a distance of 5 to 30 km, from the forward edge (perednyy kray). As a result, the main burden of combat with them falls upon the missile battalions and divisional artillery and also upon the army missile units.

The enemy's tactical means for nuclear attack, located at positions within the range of tube artillery, may be destroyed by the fire of the latter. The expenditure of shells will depend on the dimensions of the target, the range of fire, the method of determining coordinates, and the method of preparing data for firing. With the greatest accuracy of fire preparation, an "Honest John" or Lacrosse" battery can be destroyed by a battalion within 5 to 15 minutes, with an expenditure of 150 to 400 missiles.

The effectiveness of destruction is increased if chemical warheads are used. In such a case the expenditure of shells can be less. However, for this it is necessary that the fire against the enemy is carried out unexpectedly and that he is not able to take advantage of antichemical installations or of other means of defense.

In destroying the nuclear means of the enemy, tube artillery must bring fire to bear not only on the firing or launch sites but also on the fire control points of these subunits. For example, the fire of tube artillery against the radar guidance station of a battalion of "Lacrosse" disposed at a distance of 1 to 2 km from the forward edge can knock the battalion out of action for a prolonged period. Thus, tube artillery must take its position in the overall system of combat with the nuclear means of the enemy. In our opinion, it is necessary to have more long--range gun artillery in an army.

One must keep in mind that, at present, only missile units and artillery are capable of destroying the enemy's missile mounts and artillery weapons in timely fashion at their launch sites or firing positions before they deliver strikes against our troops, that is, in the course of several minutes.

Besides this, it is clear that the existing periods for the preparation of the weapons of nuclear attack of the enemy will not remain the same for any length of time; they have a constant tendency to become shorter, in accordance with the assimilation of missile equipment and with the introduction into the latter of electronic instruments for the checkout and preparation of missiles for launching.

Therefore, bearing in mind that a considerable number of the enemy's nuclear weapons will be located on launch sites or firing positions during the course of an operation, we must have a system for combat with them which can ensure their destruction within the very shortest periods.

The methods for the organization of control and the views on the employment of missiles and artillery for the destruction of nuclear means, which exist at present, do not correspond in any degree with present requirements. For example, for the destruction of a "Corporal" guided missile, detected on its site, we must open fire within 10 to 25 minutes from the moment of its detection; but on some exercises up to 1½ hours and more were required for this. An analysis of the organization of similar strikes in a series of exercises shows that a great portion of this excessively long time is taken up with transmission and analysis of reconnaissance data, with preparation and with the making of a decision in the staff of a front or an army.

The only proper path, along which we must go, is that of a decisive examination of views on the organization of the combat with nuclear means.

First of all, clearly, a definite minumum of nuclear warheads must be specially designated, from the total number allotted for an operation, for combat with the nuclear weapons of the enemy. This fundamental decision is made by the commander of the troops of a front (army) while nuclear warheads are being distributed in accordance with the tasks of an operation and by armies.

A decisive simplification of the whole structural scheme for the control of nuclear/missile weapons in the combat with the nuclear means of the enemy is also needed, eliminating a series of levels, and, as a result, considerably shortening the time for the preparation of the means of destruction for the delivery of strikes. It seems to us that the responsibility for the employment of missile units and artillery in combat with the enemy's nuclear weapons should be entrusted entirely to the commander of missile troops and artillery. This suggestion is also substantiated by the experience of exercises.

Arising from the need for the rapid destruction of enemy nuclear means which have been detected, we consider that the commander of the missile troops and artillery must

be given the right to make independent decisions on the delivery of nuclear strikes against the nuclear means of attack of the enemy, with the limit set by the commander of the troops of a front (army) for the destruction of the enemy's nuclear means.

Besides the means of destruction, the commander of the missile troops and artillery of a front (army) and the commander of the artillery of a division should have the necessary reconnaissance means to obtain the coordinates of targets and also to conduct combat reconnaissance of the enemy's nuclear means and a check on the results of fire. In accordance with this, clearly, it is necessary to make definite changes in the organizational and organic structure of missile and artillery units of artillery reconnaissance units and of subunits at divisional army and front levels.

To conduct reconnaissance of the nuclear means of the enemy, the commander of the artillery of a division must have pilotless means of reconnaissance — not less than two flights (zveno) of artillery-fire-direction helicopters (vertolet -korrektirovshchik) and also subunits for sound-ranging (zvukovoy) and radar reconnaissance and subunits for reconnaissance of the enemy's radar. In the future, a division will also require light air-reconnaissance aircraft. Divisional artillery must have not only howitzer artillery but also the necessary quantity of long-range gun artillery. Given such means of reconnaissance and destruction, the division will be able to combat the enemy's tactical nuclear means successfully.

With their own means, an army and a front will combat the nuclear means of the enemy disposed in the operational depth. To these belong "Corporal", "Sergeant" and "Redstone" guided missile battalions, detachments of "Matador" and "Mace" cruise missiles, depots and supply points for special types of weapons, airfields and command posts. In case of necessity front and army means will also supplement the means of divisions.